

Biogas to Transportation Fuels

OxEon Energy has successfully validated an integrated, demonstration-scale system that converts both the methane (CH_4) and the carbon dioxide (CO_2) in biogas into liquid transportation fuels. The project was jointly funded by the U.S. Department of Energy, and results were verified by DOE-contracted Independent Engineers. The demonstration platform has a capacity of 10 gallons per day of liquid hydrocarbons and scales to 200 bbl/day modules, allowing the system to be matched to any CO_2 or methane stream, from any source.

1,350 hours

Operated w/ >90% UPTIME

128 Gallons

Biofuel produced

53%

Biogenic carbon conversion

71%

CO_2 & Steam Conversion to Syngas

100%

SOEC Stack Thermodynamic Efficiency

SUPPORTED BY:



ABOUT OXEON ENERGY

OxEon Energy is a leading advanced energy company specializing in the development, design, and manufacture of high-performance electrochemical and thermochemical systems. With deep expertise spanning research and development, engineering design, and in-house fabrication, OxEon possesses the full, vertically integrated capability to bring complex energy conversion technologies from concept through commercial deployment, entirely under one roof. OxEon's interdisciplinary team brings together world-class scientists, engineers, and manufacturing specialists committed to accelerating the clean energy transition.

THREE PROPRIETARY TECHNOLOGIES – ONE INTEGRATED PLATFORM

Solid Oxide Co-Electrolysis



Converts CO_2 and steam into syngas ($\text{CO} + \text{H}_2$) using high-temperature electrolysis. Demonstrated 71% feedstock conversion and 100% stack thermodynamic efficiency. OxEon designs and manufactures its own SOEC stacks domestically.

Plasma Catalyzed Autothermal Reformer



Converts CH_4 to syngas by reacting methane with steam and oxygen in a non-thermal plasma. Achieved >80% CH_4 conversion thermal efficiency with <0.5 mol% residual methane, producing a clean, high-quality syngas stream.

Fischer-Tropsch Synthesis Reactor



Converts combined syngas into liquid hydrocarbons oils and waxes using a conventional or custom catalyst in a proprietary reactor design. Demonstrated 61% CO to liquid fuel conversion with 90–100% system uptime across multiple operating periods.

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